

## Remarks

This Amendment responds to the Office Action dated 16 May 2005. It is being filed within one month following the period set for responding to the 16 May 2005 Office Action, and is accompanied by a Petition for a One Month Extension of Time and the requisite fees therefor.

In addition, this Amendment is accompanied by a Supplemental Information Disclosure Statement and the requisite fees therefor.

### For the Claims:

The 16 May 2005 Office Action examined all claims (i.e., claims 1-41). The Office Action rejected claims 1-5, objected to claims 6-20, and allowed claims 21-41. The Office Action rejected claims 1-5 under 35 U.S.C. 102(b) as being anticipated by Goodson et al. (U.S. Patent No. 5,226,060). For the record, page 2 of the Office Action actually calls out the name "Goodson et al" but lists the patent number for Agazzi et al. (U.S. Patent No. 5,747,597) in stating the rejection. But the subsequent details of the Office Action are consistent with a rejection over *Goodson et al.* and inconsistent with a rejection over *Agazzi et al.*, so applicant presumes that the recitation of the patent number for *Agazzi et al.* was an inadvertent mistake and that the rejection is indeed made over *Goodson et al.* and not *Agazzi et al.* The Office Action also objected to claims 6-20 as being dependent upon a rejected base claim, but indicated that claims 6-20 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The present amendment amends rejected claim 1 and makes no changes to rejected claims 2-5. Reconsideration of claims 1-5 in light of the present amendment and the below-presented remarks is respectfully requested. The present amendment makes no changes to objected-to claims 6-20 or to allowed claims 21-41. Accordingly claims 6-41 continue to recite allowable subject matter. And, the present amendment adds new claims 42-52. Claims 43-47 depend from independent claim 42 and claims 49-52 depend from independent claim 48. The requisite fees necessitated by the addition of new claims 42-52 accompany this amendment. Examination and consideration of new claims 42-52 are respectfully requested.

Applicant respectfully requests reconsideration of the rejection of claims 1-5 under 35 U.S.C. 102(b) as being anticipated by *Goodson et al.* *Goodson et al.* teaches a receiver circuit, not a digital communications transmitter as recited in the preamble of claim 1. As a receiver circuit, it obtains a modulated carrier signal that may include distortion induced as a result of the transmission process, as noted in *Goodson et al.* at column 1, lines 33-35. This distortion is also called channel distortion in column 1. Thus, the signal received at the *Goodson et al.* receiver circuit, called "received signal 101", is already distorted through the transmission process. It is therefore the purpose of the *Goodson et al.* receiver circuit to equalize this distortion. Thus, the *Goodson et al.* receiver addresses a very different problem than is faced by the "method of managing distortion in a digital communication transmitter" claimed in applicant's claim 1, and *Goodson et al.* teaches a different solution.

Applicant's claim 1 recites the training of a linear predistorter and the training of a nonlinear predistorter. The

Office Action alleges that the *Goodson et al.* equalizers are equivalent to applicant's recited predistorters. But equalization applied in a receiver to compensate for distortion induced as a result of the transmission process is not equivalent to predistortion. Such equalization may be thought of as "post-undistortion."

Predistorters "pre-distort." In other words, they intentionally insert distortion into a signal that has no relevant distortion at the point where the predistortion is inserted. The predistortion is applied with the goal of distorting the signal to compensate for distortion that will be introduced into the signal downstream of the predistorter. Hence, the prefix "pre" in "predistorter" refers to the fact that intentional distortion is inserted in an otherwise undistorted signal by the predistorter before an undesirable and unwanted distortion of the signal occurs. The amendments made to claim 1 clarify the relationship between the predistorter and the analog transmitter components that introduce at least a portion of the distortion. In particular, each predistorter "is located upstream of said analog-transmitter components," as recited in claim 1.

The receiver circuit taught by *Goodson et al.* teaches of no analog transmitter components as recited in claim 1 and of no predistorters located upstream of such analog transmitter components, as also recited in claim 1. Since *Goodson et al.* fails to disclose what applicant recites in claim 1, *Goodson et al.* does not anticipate applicant's claim 1.

Nor is applicant's claim 1 obvious in view of *Goodson et al.* The fact that a type of filter circuit known in the art as an equalizer may, in one embodiment of applicant's invention, be

used to implement the predistorters recited in claim 1 does not mean that one can replace the *Goodson et al.* "post-undistorter" equalizers with predistorters. In the *Goodson et al.* receiver circuit, equalizers 117 and 133 are specifically configured to process a distorted signal to compensate for the distortion that is introduced upstream of the equalizers and to introduce no additional distortion between the equalizer and the downstream components, such as data recovery circuit 125 and summing circuit 137, that determine how to configure the equalizers.

A predistorter is configured to do a nearly opposite function. A predistorter is specifically configured to process an undistorted signal (at least from the predistorter's perspective) to compensate for distortion that is introduced downstream of the predistorter and to tolerate this downstream-introduced distortion in determining how to configure the predistortion. Any distortion that may be present in the signal processed by the predistorter is deemed irrelevant and is not compensated for.

If one were to replace either or both of the *Goodson et al.* "post-undistorter" equalizers 117 and 133 with one or more predistorters, then the result would be a receiver circuit that would do a worse job of recovering data from the received signal. No appreciable distortion is introduced downstream of equalizers 117 and 133 in the *Goodson et al.* receiver circuit, so "replacement" predistorters would insert little if any compensation for such downstream distortion-free components. In addition, from the perspective of a predistorter any distortion that occurs upstream of the predistorter is irrelevant and will not be compensated. Consequently, the compensation that is the whole point of the equalizers 117 and 133 in the *Goodson et al.*

receiver circuit would not be provided and data would be recovered with less success. Such a ludicrous modification is not suggested because it would make *Goodson et al.* unsuitable for its own intended purpose.

For the above-discussed reasons, applicant believes that independent claim 1 and dependent claims 2-5 are allowable. Reconsideration is respectfully requested. And, since objected-to claims 6-20 depend from claim 1 and in some instances claim 5, claims 6-20 are believed to be allowable too.

The present amendment adds new claims 42-52. Independent claim 42, while not identical to, is nevertheless directed generally to the subject matter that is also the object of allowed claim 21. Claims 43, 44, 45, 46, and 47 depend from claim 42 and, while not identical to, are nevertheless directed generally to the subject matter that is also the object of objected-to and allowed claims 6, 15, 15, 22, and 24, respectively. Independent claim 48, while not identical to, is nevertheless directed generally to the subject matter that is also the object of allowed claim 34. Claims 49, 50, 51, and 52 depend from claim 48 and, while not identical to, are nevertheless directed generally to the subject matter that is also the object of allowed claims 35, 37, 38, and 40, respectively.


Applicant believes that new claims 42-52 are generally allowable for the substantially same reasons that causes claims 6-41 of the original application to be allowable. Examination and consideration of new claims 42-52 is respectfully requested.

Applicant believes that the foregoing amendments and remarks are fully responsive to the rejections and/or objections recited

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in the 16 May 2005 Office Action and that the present application is now in a condition for allowance. Accordingly, reconsideration of the present application is respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, reading "Lowell W. Gresham", written over a horizontal line.

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